

Mentor Marsh Coastal Restoration Project, Mentor Marsh State Nature Preserve

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- *Why restoration at Mentor Marsh?* Once designated a National Natural Landmark (1966) for being one of the most species-rich sites on the Great Lakes shoreline, the Marsh is now dominated by one species, *Phragmites australis*.
- *What is Phragmites?* *Phragmites australis* (Common reed) is an invasive wetland grass from Africa and Asia that is not native to North America.
- *Why is it bad for Mentor Marsh?* At an average of 225 stems in a square meter, *Phragmites* crowds out native plants and wildlife, forming tall, dense impenetrable stands. Dead, dry vegetation over winter is a fire danger to nearby residents and structures. City of Mentor and safety forces (Fire and Police Depts.) of many local communities have, altogether, spent more than \$1million dollars fighting 13 Marsh fires.
- *What is the average height of Phragmites?* It can grow up to 6 meters (20 feet) high.
- *How does it spread?* By roots (rhizomes) that can reach up to 2 meters (6.5 feet) underground and also by seed, from the flower head of the plant. Wind pollinated, insects such as honeybees do not use the grass for food.
- *Can Common Reed be removed by another method?* At over a million stems per acre in the 400-acre eastern basin, not really successfully. Mature plants have sharp leaves and rhizomes are very deep in the soil making it hard to remove by digging. This plant, like most perennial grasses, also re-sprouts from any root material left in the ground, so prescribed burning or mowing is not feasible. Flooding the Marsh basin would cause more problems.
- *What is being done to control it?* Options for controlling *Phragmites* are limited and require a combination of aerial and ground herbicide application.
- *Who is leading the restoration effort?* Cleveland Museum of Natural History scientists, professionals and contractors.
- *Where and when will the restoration activities take place?* In 2016, the project area is expanding to include both sides of Corduroy Rd. Target date for herbicide application is August-October.
- *What safety measures are used to protect people and homes?* A 23 meter (75 feet) wide "hand-spray only zone" buffer around the Marsh border will ensure more precise treatment to protect plants at the edge of the Marsh. These plants are important for restoration and we want to protect those areas. Aerial spraying will only take place on the interior portion of the Marsh, inside of this buffer area to protect shoreline trees from drift. Close monitoring of wind conditions has prevented any drift from harming trees during previous aerial applications. In addition, during the aerial application visitors will not be allowed in the treatment areas.
- *What herbicide will be used?* EPA approved aquatic herbicide AquaNeat®, a glyphosate compound approved for use in aquatic areas that does not harm aquatic organisms.
- *How does AquaNeat® work?* The chemical kills plants by inhibiting the activity of certain enzymes that are present only in plants. Glyphosate then binds tightly to soil for up to 6 months before it is broken down by bacteria in the soil. Glyphosate is not likely to get into groundwater because it binds tightly to soil. The Lake County Soil and Water Conservation District will continue conducting water quality sampling pre and post treatment.

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- *How will this herbicide impact other plants and wildlife?* The only herbicides that are effective in controlling *Phragmites* are broad-spectrum or non-selective. Areas with established native plants will be avoided during treatment. This herbicide underwent extensive testing as required by the US EPA before the product was registered for use in the United States. Testing on fish, amphibians and insects showed that the potential for unreasonable adverse effects to wildlife and other non-target organisms will be minimized when used according to label instructions.
- *What safety measures will be used to protect the environment?* CMNH scientists are committed to protecting our natural environment. Using best management practices the AquaNeat® herbicide has been diluted down to a very low 2.0% concentration, which is below the recommended label rate. Further reducing herbicide use, aerial applications via helicopters reduce the volume sprayed down to a mist of very fine water vapor versus applying larger water droplets with ground-based sprayers. Under U.S. EPA guidelines for aquatic toxicology, tests show that at very low concentrations the herbicide is practically non-toxic to sensitive organisms. For example, Leopard frogs were first found in 2004 along the Wakerobin boardwalk after the *Phragmites* was eradicated there in 2003 using AquaNeat® and are still present in 2016.
- *How will aerial application work?* A FAA-certified helicopter with a State Department of Agriculture approved herbicide applicator license will spray AquaNeat a few meters above the treatment area.
- *How will people be notified?* Via social media, public messages, mailings, canvassing of neighbors, signs at Mentor Marsh Nature Center and from CMNH staff.
- *How long will aerial spraying last?* Spraying is expected to take several hours to two days and is wind speed and weather dependent.
- *Are there other areas in the Great Lakes where herbicides are used to control *Phragmites*?* Yes, this is a common restoration method of wetlands across the Great Lakes including Sandusky Bay/western Lake Erie marshes as well as Presque Isle State Park in Erie, PA.
- *What is the desired end goal?* A landscape mosaic of native marsh plants and swamp forest trees. In 2016, CMNH staff have already documented over 60 species of native plants sprouting from the existing soil seed bank up through the flattened *Phragmites*! In 2017 9,000 trees are scheduled to be planted around remnant swamp forest areas of the Marsh.
- *What other control methods will be used and when?* Mowing/smashing of dead plants will occur later this fall and early winter to expose the soil seed bank to sunlight and encourage germination.
- *How long will restoration take?* The first year of restoration is the slowest. With each progressive year, more and more native plants will establish from the seedbank and plants already present, such as along the Wakerobin boardwalk. CMNH Land Stewards and Nature Center staff will be collecting seeds from native plants such as milkweeds, bur-reed, and buttonbush to propagate for planting. We could use your help too! Contact the Nature Center if you are interested in volunteering!
- *Restoration Partners:* CMNH and Lake County Soil and Water Conservation District
- *Supporting Restoration Partners:* Ohio Department of Natural Resources Divisions of Natural Areas and State Parks, City of Mentor, City of Mentor Fire Department, Mentor City Schools, Lake County Commissioners Department of Utilities, Ohio Lake Erie Commission grantee Linda Sekura, and the many private landowners who have donated or allowed restoration activities on their Marsh property. Last updated August 05, 2016